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ABSTRACT

This paper briefly describes the design and development of The Museum Visitor's Prototype, an interactive multimedia videodisk that was developed for the Museum Education Consortium. The consortium, which consists of the education departments of seven art museums, investigates the roles that technology might play in museum and art education, and seeks to provide more effective access to the arts. The prototype was created as part of a larger research effort to explore new discovery-based methods for introducing adult visitors with little or no background in art or art history to different ways of looking at and thinking about paintings. This report discusses the Museum Visitor's Prototype, key design and production issues, highlights of the formative research, and potential future developments in this area. (ALF)

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Multimedia Design Research for the Museum Education Consortium's Museum Visitor's Prototype

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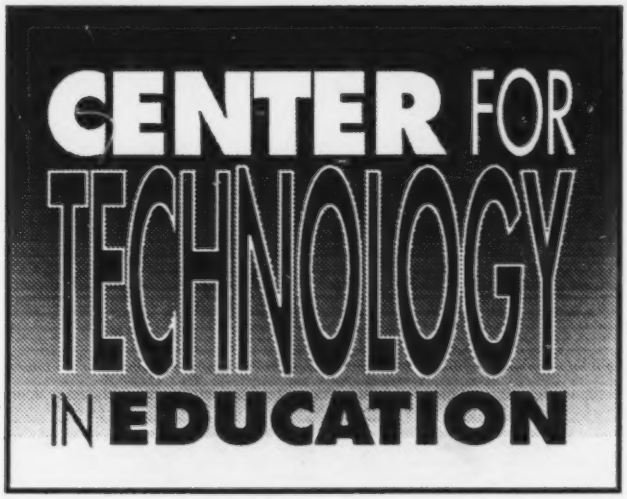

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MULTIMEDIA DESIGN RESEARCH for the MUSEUM EDUCATION CONSORTIUM'S MUSEUM VISITOR'S PROTOTYPE

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The Museum Education Consortium

The Museum Education Consortium is a collaborative effort among the education departments of seven art museums: The Art Institute of Chicago; the Museum of Fine Arts, Boston; The Brooklyn Museum; the Metropolitan Museum of Art; The Museum of Modern Art; The National Gallery of Art; and the Philadelphia Museum of Art. It was founded in 1987 to investigate the roles that technology might play in museum and art education and in efforts to provide more effective access to the arts. Several research and development prototypes have been developed over the past five years as part of this research and development effort. This paper briefly describes the design and development of one of these prototypes—"The Museum Visitor's Prototype" (1988-1991)—which was created as part of the larger research effort to explore new methods for introducing visitors with little or no background in art or art history to different ways of looking at and thinking about paintings. The work of the consortium has been funded by The Pew Charitable Trusts, the J. Paul Getty Trust Grant Program, and the Andy Warhol Foundation for the Visual Arts.

This paper was presented at the International Conference on Hypermedia and Interactivity in Museums, 1991.

The Museum Visitor's Prototype

The Museum Visitor's Prototype is an interactive multimedia prototype that was developed as a discovery-based learning experience for testing with adult museum visitors who have limited knowledge of art history or art. It was designed to be used in an art museum setting by one person alone or by small groups of visitors for five to fifteen minutes. The goals of the prototype were several:

1. To introduce users to new tools for learning to look at and reflect on works of art using the features of interactive video technology to facilitate this process, and to enjoy the experience of looking at art;

2. To pique curiosity and foster self-directed exploration in an engaging way, so that the experience of using the interactive prototype would be enjoyable as well as informative, and would be based on each user's individual interests and evolving knowledge base;

3. To offer easy access to a rich multimedia information base of images, films, and text so that users would come away with an increased understanding of selected Impressionist and Post-Impressionist artists and their work.

Although the final product will most likely explore several artists, their work, and their life and times, the prototype focuses, for the sake of example, on one artist and, in fact, on one painting: Claude

Monet and his "Waterlilies" painting (1926), which is currently at the Museum of Modern Art in New York. The discovery-based design of the prototype allows for access to information about a variety of paintings, sketches, details, artists, and documentary images and films, particularly as they relate to Monet and his work. The three frameworks for exploration in the prototype include:

- **Paintings**: looking at the painting "Waterlilies" itself;
- **Artists**: finding out about the artist, Claude Monet, through his studio;
- **Context**: finding out about relevant historical contexts, such as Monet's life in his garden at Giverny, that reveal something about the life and times of the artist.

A video overview introduces the prototype's contents and how to use its interactive features. Audio commentary, often accompanied by "talking heads" video, is available from several different characters, including a museum educator, a museum visitor, a cultural historian, and an art student. Various interactive features include visual zooms to details of paintings, a timeline of cross-referenced historical and contextual information, open-ended questions for directed looking, and side-by-side comparisons of paintings or between paintings and film clips depicting the location painted. Access to information is made available via selectable, "hot" sections of visual menus, such as canvasses and journals depicted graphically in an image of Monet's studio, and through the selection of pictographic icons at the top and bottom of the screen.

Since the project was a research and development effort, the consortium decided to experiment with the creation of a design research prototype which included a potpourri of design ideas and features that could be tested with visitors for their effectiveness. As such, the prototype is somewhat unusual in that it attempts to explore the possibilities of a discovery-based design for adults and has a variety of features and options for testing, rather than a single, consistent interactive blueprint for a final product. The prototype runs on a hardware platform that includes a Macintosh II computer with extended memory and Truevision's Nuvista image capture and overlay board, a Pioneer 4200 videodisc player, an Electrohome color monitor, and stereo speakers. In an effort to test reactions to the image quality of images stored in different formats, images in the prototype are displayed in both analog form from the videodisc and digital form from the computer's hard disk. Some of the motion footage was filmed in HDTV as a part of the image quality testing, then downconverted and stored on the videodisc. The input device is a mouse.

Key Design and Production Issues

As with most interactive multimedia projects, many people contributed to the various phases of the design and production of the Museum Visitor's Prototype. The team included people who worked on project management, design treatments and storyboards, content and image research, production, image, film, and sound acquisitions, post-production, digitizing, disk mastering, C programming, graphics, and formative testing. Among the major contributors were Jane Freeman, Mary Lewis, Frankie Mann, Judy Meighan, Alan Newman, Sharon Picker, Nancy Richner, Robin Sand, Dorothy Shamonsky, Susan Stedman, and Kathy Wilson. While the design and production team worked on the evolving interactive prototype, a number of key development issues became recurring themes discussed by the team as well as by the consortium as a whole. Some of these issues included:

1. What is the more appropriate *pedagogical approach* for a particular application? What are our goals? What do we hope users will gain or learn by using a particular application?

2. What is the *best use of interactive technologies* in museum settings and in art education in general?

3. How do you define the *target audience* of museum visitors? Who is this application for? What is the *target context* for use? Where within a museum setting will interactive technologies best be used? Where outside the museum? Where will a particular application be used?

4. What is the *expected interaction time*? How long do we expect users to actually use it?

5. What is the content area we are interested in? What kind of *content research* should be done for a multimedia database (photographic images, film clips, sounds, music, text, etc.) and who should do it? What are the key *image acquisitions and rights clearance* issues? How is this research different from traditional scholarly research? How is editorial control determined? Who is the "author"?

6. How *relevant* is an interactive application to current museum practice? How does it complement existing materials (for example, wall labels and brochures) and practices (for example, gallery talks and lectures)?

7. What is the optimal *user interface design*? What is the nature of the interaction we want to encourage? How will we introduce, contextualize, and facilitate the interactive experience to make it more inviting, accessible, and meaningful?

8. What is a *prototype*? What is a "deliverable" for a research and development project? How important are production values in a prototype? How complete and consistent should a prototype be?

9. What is the most appropriate *hardware and software* to use? How do you make such technical decisions?

10. How can the effectiveness of a prototype best be *evaluated* to meet our goals with our target audience in our target context?

11. Can interactive programs be designed that will *encourage seeing the real works of art* in museum galleries?

12. Is the *image quality* of existing hardware and imaging systems good enough to display works of art? How can you display the best possible color and clarity?

Highlights of the Formative Research

Over the course of 1990 and 1991, Nancy Richner and I conducted some small-scale formative research studies with museum visitors at the Museum of Modern Art in New York and the Brooklyn Museum using the preliminary Museum Visitor's Prototype, described briefly above. As with most formative research, our goal was to get a better feel for the effectiveness of the prototype with our target audience in our target context. Toward this end, we observed visitors using the prototype to get a sense of which of the design features, among the potpourri of design ideas we experimentally included in the prototype, seemed to work best. We used this feedback from visitors as a basis for focusing and revising the design of the prototype in an effort to create a more effective product.

In our formative study, we considered some of the classic formative research questions, which typically have to do with issues of:

- **Appeal:** Do they like it?
- **Useability:** Can they use it?
- **Relevance and Meaning:** What do they get out of using it? Of what value do they think it is? What kinds of things do they learn from using it? (although this last issue is always difficult to assess with a prototype, which by nature is incomplete in terms of content depth and richness).

We also tried to observe more closely how museum visitors deal with and think about the challenges presented by a prototype such as ours, which is unfamiliar to many on at least one, if not all three, of the following fronts:

- in terms of the tec*hnology* it uses;
- in terms of the *discovery-based* navigational design;
- in terms of its *content.*

We met with 45 visitors, mostly in pairs. These were people who came to the museum with someone else: husbands and wives, mothers and daughters, mothers and sons, unmarried couples, female friends, male friends, fellow students, work colleagues, etc. For our formative studies, the prototype was set up in spaces allocated by each museum for educational activities. In both museums this space was somewhat remote from the museum's lobby entrance, cafeteria, gift shop, or galleries. We approached visitors for our studies mostly in the lobby areas. Two researchers met with each pair of visitors for 20- to 30-minute sessions.

The reactions and comments from visitors during and after using the museum visitor's prototype, combined with our observations of their strategies for using it, illuminated a number of interesting, and perhaps general, issues about the great variety among adult museum visitors in terms of such things as their comfort level with using new technologies, their attitudes toward learning something new, and their great variety of styles for approaching and learning to navigate through a discovery-based environment. Although the reactions from visitors led to specific ideas for revising the design of the museum visitors prototype, we will focus here on some of the many issues raised in the course of our observations, which are, perhaps, pertinent in a more general way to the design of discovery-based interactive multimedia environments for adults.

There Was a Wide Variability among Museum Visitors

The variability among museum visitors to these two museums was amazing: in terms of their age range (ages 14 to 77 in our sample); their familiarity with art or art history; their prior use of computers and, more specifically, their use of the mouse and Macintosh interface; their geographical distribution (MoMA, for example, has many international visitors); their time commitment to their museum visit; their inclination to try new and different things; their relationship to the person with whom they're visiting the museum; etc.

Different Strategies of Use

In keeping with this variability was the fact that everyone approached and used the prototype in a unique way. Some people jumped right in, trying all the options, scanning the prototype's depth and breadth. Others proceeded cautiously, asking questions at first about how to proceed, where to go, and what to do. Some plodded very methodically through the options in a linear way—top to bottom, left to right. Some used the character, Amelia, as a guide. Some enjoyed reading the text, often aloud. Some viewed the films, others stepped through images of collections of paintings. There were sometimes great differences in strategies for using the prototype between people in the pairs.

Hands versus Mouths

One pattern that was true in many cases, as with anything new, was an initial period of "getting to know" the prototype, of finding out what it was, becoming at ease with its initial newness, and "figuring out" how the discovery-based navigational design worked. It was primarily during this initial encounter with the prototype that we found some people questioning with their mouths what they were actively doing with their hands. For example, some people would be in the process of selecting an option, when they would ask the researchers if they could select the option. Their hands seemed to know how to do and be willing to do what their mouths expressed hesitation or doubt about doing. Part of them seemed to be having fun exploring and discovering, while the other part seemed to question this, to want clarity and reassurance that this was okay. Some comments included:

> Some people might be hesitant with the mouse, not sure what's there, but you play with it and you find out.

> It branches out a lot. There is no single route through it, no preset destination. I didn't know where I was. I was wandering. I felt I wanted to spend more time, to stay with it, to figure it out.

It's Engaging

Most people, when we first enlisted them as volunteers in the lobby, made it clear that they didn't have much time to spend with us, since they didn't have much time to spend in the museum as a whole. However, in almost every case, despite initial hesitation, people became so involved and engaged with the prototype that we had to interrupt them to remind them that 20, or more, minutes had passed, which was longer in most cases than the 10 or 15 minutes they had felt they could spare originally.

What is this Thing?

Many of the visitors found the experience of using the prototype so new that they seemed to be working through with themselves and with each other such issues as: "What is this thing?" "What is it good for?" "Who is it for?" "Where should it be used? in museums? homes? schools?" They had typically come to the museum expecting to see paintings, perhaps to read wall labels or pamphlets or to hear a docent, but none had come expecting to use this experimental interactive multimedia prototype. It didn't fit into any of their preconceived notions of a museum visit, and they often remarked on this, pondering its nature, its role, and its place, with each other. In addition, for many of those who had used computers before, their experience with the prototype didn't fit into their prior experience of using computers. As one visitor said:

> This is really interesting and fun. Anyone with half a brain could figure it out. I think it's great. I don't like computers, but this I like. You get a lot more detail here. Even a docent couldn't give you this information. If you're not interested in art, this would be great. You see, you say, "oh wow?" you get interested. One thing leads to another. You dig deeper. Where would it be? One wouldn't be enough. This would be great in schools."

Learning Through a Discovery-Based Experience

Some adults found it very difficult, at least at first, to let themselves go and simply explore the prototype in

a discovery-based fashion without some initial verbal questioning and resistance. Once visitors unfamiliar with the technology became more comfortable with it and the use of the mouse to select icons and "hot" sections of graphical menus, most became quite absorbed with the images and interested to discover the information made available to them in the prototype. Many felt that they learned new things and came to think about paintings and artists differently. Some of their comments were as follows:

> I learned a lot. I didn't know about his studio, his garden. This is much more than just a painting. You have a chance to sit down and get the context. I like the back and forth between the painting and the context. It's a really neat idea.

> "I think it's great, the color, the questions it asked, the information it gives you, it's great! I like the whole concept of it. So often, when I read about art, I only think about what the book says. This leads you to other questions which stimulate your thinking.

> It doesn't talk down to you. It's not overwhelming. You can choose what you want. It's very visual, therefore, it's good for people who have no background in this area. It's impossible to sit down and look at things in a museum without something like this. This opens up information. It's easier than a book. It's great to have the context here. It's visually satisfying.

Mediated Conversation

In a great number of cases, the prototype was a stimulus to conversation in interesting ways. Its images and content, as well as its many design options, seemed to provoke discussion and interaction among the pairs. At times this back and forth discussion was a sort of thinking through together what they wanted to do, and how they wanted to proceed. At other times, it was a vehicle for discussing personal connections to the images and information, such as memories of a visit to Giverny or reactions to a particular painting. Sometimes it was an exclamation of surprise over discovering something new, such as, "I didn't realize [Monet] designed the garden at Giverny himself!" As one visitor said:

> So many people come to look at paintings, but this makes people think. This makes people think and verbalize.

Summary

Our formative research sessions spent observing visitors using the interactive multimedia Museum Visitor's Prototype, in the context of two quite different art museums, were invaluable in terms of providing useful feedback about the effectiveness of the prototype's various design features to meet its goals with its intended audience. Through this process, the concepts of the design and production team as implemented in the preliminary prototype were confirmed or disconfirmed and suggestions for revisions were generated. In general, we found that after spending about 20 minutes exploring the prototype's interactive features and content richness, and overcoming, in some cases, any initial apprehension about its newness, museum visitors were quite enthusiastic about the prototype, engaged by it, able to give us good suggestions for design revisions, and definitely felt it had importance. Their parting comments included:

> I like this. It's very good, it's the way things are going. It's nice to see a useful use of computers. I'm glad you're developing this. It's another way to introduce people to paintings, artists, how to look at paintings. You have lots of choices. You try them all. I like the voluntary aspect, I like the options, you can pick what you want. This is patient, responsive, it seems to wait for you. You want to linger, to take your time, leisurely, to see what's there.

> I like it. It's nice. It's easy to get around. It makes me want to see the real paintings now.

Ultimately, this iterative process of design, research with visitors, and redesign will lead to the creation of a more appealing, useable, and effective product for the intended target audience. In the future, based on the results of various research and development efforts such as this, it is possible that better and more diverse interactive multimedia products will be developed to complement the array of educational materials and services currently available in art museums, such as wall labels, slide sets, audio guides, videotapes, brochures, and gallery talks. It is our hope that by attempting to offer a diverse range of effective and appealing educational materials to the public, we will better ensure that there will be something accessible and appropriate to the unique needs of each visitor, regardless of age, background, learning style, or interest.